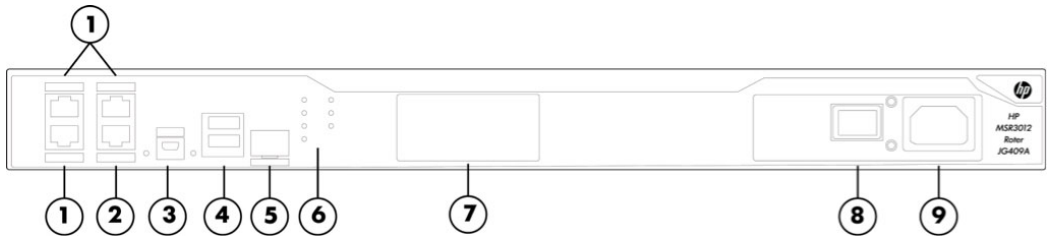
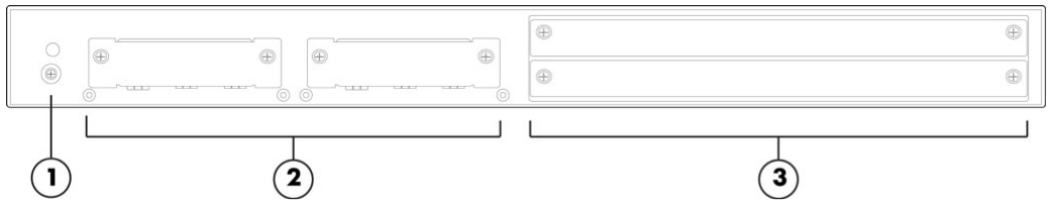
Overview



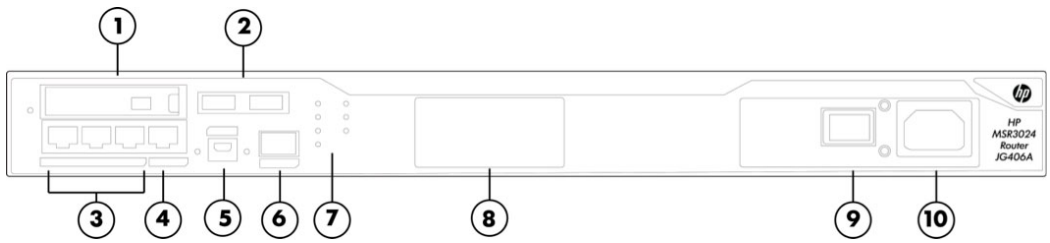
HP MSR3012 AC Router- Front (JG409A)

1. RJ-45 1000BASE-T ports (IEEE 802.3ab Type 1000BASE-T)
2. Console port/AUX port (CON/AUX)
3. USB console port(CON)
4. USB 2.0 Port for 3G modem and USB disk
5. SFP fixed Gigabit Ethernet SFP port
6. System Activity LEDs
7. RPS receptacle cover
8. Power Switch
9. AC-input power receptacle



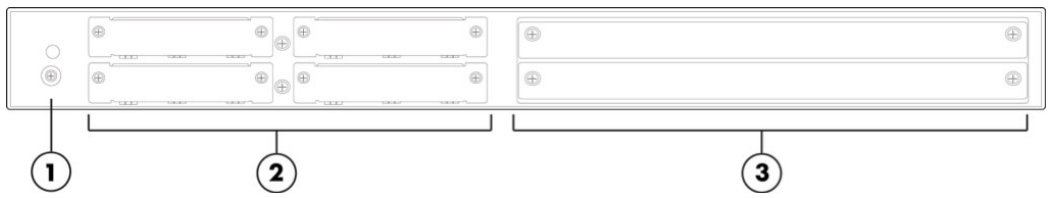
HP MSR3012 AC Router- Rear (JG409A)

1. Grounding Terminal
2. SIC slots
3. HMIM module slots



HP MSR3024 AC Router - Front

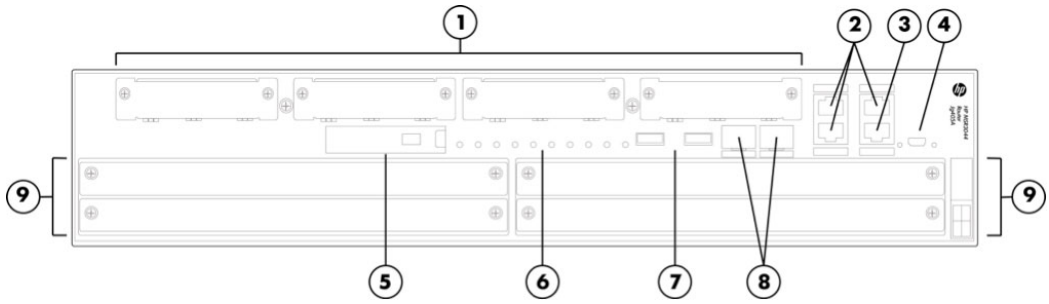
1. CF Card Slot
2. USB 2.0 Port for 3G modem and USB disk
3. RJ-45 1000BASE-T ports (IEEE 802.3ab Type 1000BASE-T)
4. Console port/AUX port (CON/AUX)
5. USB console port (CON)
6. Fixed COMBO 1000M RJ45/SFP
7. System Activity LEDs
8. RPS receptacle cover
9. Power Switch
10. AC-input power receptacle



Overview

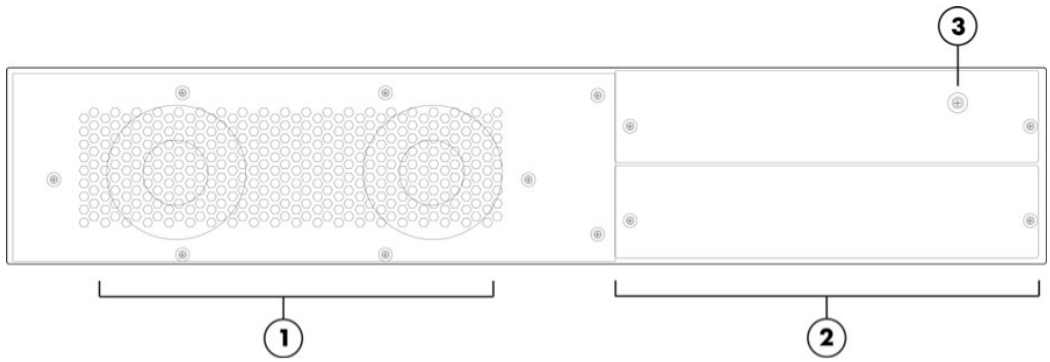
HP MSR3024 AC Router - Rear

1. Grounding terminal
2. SIC module slots / 2 - DSIC module slots
3. HMIM module slots



HP MSR3044 Router - Front

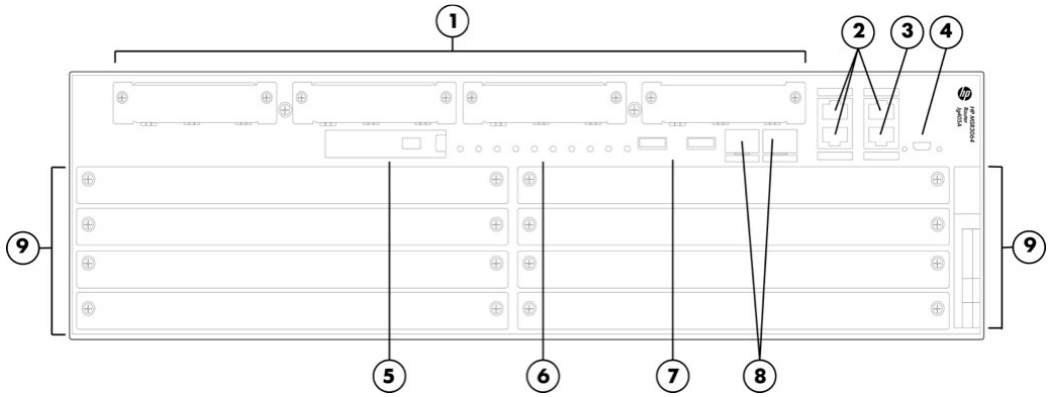
1. 4 - SIC module slots / 2 - DSIC module slots
2. 3 Fixed 10M/100M/1000M RJ45 ports
3. Console port/AUX port (CON/AUX)
4. USB console port (CON)
5. CF Card Slot
6. System Activity LEDs
7. 2 USB 2.0 Port for 3G modem and USB disk
8. 2 Fixed COMBO 1000M RJ45/SFP ports min=0 \ max=2 SFP Transceivers
9. HMIM module slots (4 - Half Height Slots) / 0 - DHMIM module slot (Double Width Full Height Slot



HP MSR3044 Router - Rear

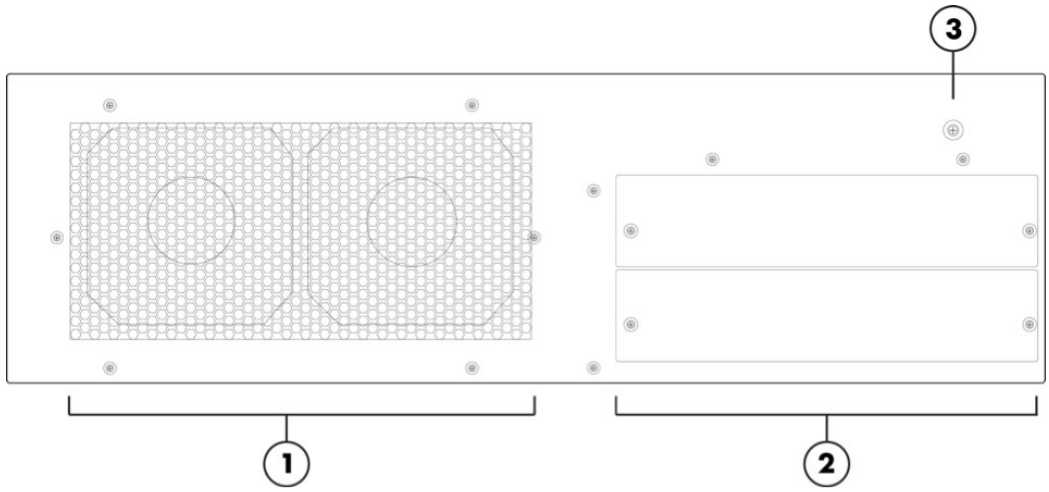
1. Fans
2. Power Supplies
3. Ground

Overview



HP MSR3064 Router

1. SIC module slots / 2 - DSIC module slots
2. Fixed 10M/100M/1000M RJ45 ports
3. Console port/AUX port (CON/AUX)
4. USB console port (CON)
5. CF Card Slot
6. System Activity LEDs
7. 2 USB 2.0 Port for 3G modem and USB disk
8. 2 Fixed COMBO 1000M RJ45/SFP ports min=0 \ max=2 SFP Transceivers
9. 6 - HMIM module slots (4 Half Height + 2 Full Height Slots) / 1 - DHMIM module slot (Double Width Full Height Slot)



HP MSR3064 Router

1. Fans
2. Power supply slots
3. Grounding Terminal

Models

HP MSR3012 AC Router	JG409A
HP MSR3024 AC Router	JG406A
HP MSR3044 Router	JG405A
HP MSR3064 Router	JG404A

Overview

Key features

- Up to 5 Mpps forwarding performance; support for multiple concurrent services
- Open Application Platform for HP AllianceOne applications like WAN acceleration and Microsoft® Lync
- Embedded security features with hardware-based encryption, firewall, NAT, and VPNs
- No additional licensing complexity; no cost for advanced features
- Zero-touch solution, with single pane-of-glass management

Product overview

The HP MSR3000 Router Series, the next generation of router from HP, is a component of the HP FlexBranch solution, which is a part of the comprehensive HP FlexNetwork architecture. These routers feature a modular design that delivers unmatched application services for medium- to large-sized branch offices. This gives your IT personnel the benefit of reduced complexity, and simplified configuration, deployment, and management.

The MSR3000 routers use the latest multicore CPUs, offer Gigabit switching, provide an enhanced PCI bus, and ship with the latest version of HP Comware software to help ensure high performance with concurrent services. The MSR3000 series provides a full-featured, resilient routing platform, including IPv6 and MPLS, with up to 5 Mpps forwarding capacity and 3.3 Gb/s of IPSec VPN encrypted throughput. These routers also support HP Open Application Platform (OAP) modules to deliver integrated industry-leading HP AllianceOne partner applications such as virtualization, unified communications and collaboration (UC&C), and application optimization capabilities.

The MSR3000 series provides an agile, flexible network infrastructure that enables you to quickly adapt to changing business requirements while delivering integrated concurrent services on a single, easy-to-manage platform.

Features and benefits

Performance

- **Excellent forwarding performance**
  provides forwarding performance up to 5 Mpps (3.3 Gb/s); meets the bandwidth-intensive application demands of enterprise businesses
- **Powerful security capacity**
  includes an embedded hardware encryption accelerator to improve encryption performance; IPSec encryption throughput can be up to 3.3 Gb/s with a maximum of 4,000 IPSec VPN tunnels

Product architecture

- **Ideal multiservice platform**
  provides WAN router, Ethernet switch, wireless LAN, 3G/4G WAN, firewall, VPN, and SIP/voice gateway all in one device
- **Advanced hardware architecture**
  provides multicore processors, gigabit switching, and PCIE bus; external RPS or dual internal power supplies, and internal and external CF cards are offered; new high-performance MIM modules (HMIM) supported
- **New operation system version**
  ships with new Comware v7 operating system delivering the latest in virtualization and routing
- **Open Application Platform architecture**
  provides unmatched application and services flexibility, with the potential to deliver the functionality of multiple devices, creating capital and operational expense savings and lasting investment protection
- **Field-programmable gate array (FPGA)**
  improves the bandwidth of SIC module slots from 100 Mb/s to 1000 Mb/s, and improves uplink performance from 1 Gb/s to 10

Overview

Gb/s

- **Multi Gigabit Fabric (MGF)**
  eases utilization of the main processor by transmitting Layer 2 packets directly via the MGF

Connectivity

- **High-density port connectivity**
  provides up to 10 interface module slots and up to three on-board Gigabit Ethernet ports
- **Multiple WAN interfaces**
  provides traditional links with E1, T1, Serial, and ISDN; high-density Ethernet access with WAN Gigabit Ethernet and LAN 4- and 9-port Fast Ethernet; mobility access with 3G SIC module and 3G/4G USB modems, and high-speed E3/T3 and 155 Mb/s OC3 access options
- **Packet storm protection**
  protects against broadcast, multicast, or unicast storms with user-defined thresholds
- **Loopback**
  supports internal loopback testing for maintenance purposes and an increase in availability; loopback detection protects against incorrect cabling or network configurations and can be enabled on a per-port or per-VLAN basis for added flexibility
- **3G/4G LTE access support**
  provides 3G wireless access for primary or backup connectivity via a 3G SIC module certified on various cellular networks; optional carrier 3G/4G LTE USB modems are available
- **USB interface**
  uses USB memory disk to download and upload configuration/OS image files; supports an external USB 3G/4G modem for a 3G/4G WAN uplink
- **Flexible port selection**
  provides a combination of fiber and copper interface modules, 100/1000BASE-X support, and 10/100/1000BASE-T auto-speed detection plus auto duplex and MDI/MDI-X

Layer 2 switching

- **Spanning Tree Protocol (STP)**
  supports standard IEEE 802.1D STP, IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) for faster convergence, and IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
- **Internet Group Management Protocol (IGMP) and Multicast Listener Discovery (MLD) protocol snooping**
  controls and manages the flooding of multicast packets in a Layer 2 network
- **Port mirroring**
  duplicates port traffic (ingress and egress) to a local or remotemonitoring port
- **VLANs**
  supports up to 4,094 VLANS or IEEE 802.1Q-based VLANs
- **sFlow**
  allows traffic sampling
- **Define port as switched or routed**
  supports command switch to easily change switched ports to routed (maximum of four Fast Ethernet ports)

Layer 3 routing

- **Static IPv4 routing**
  provides simple manually configured IPv4 routing
- **Routing Information Protocol (RIP)**
  uses a distance vector algorithm with UDP packets for route determination; supports RIPv1 and RIPv2 routing; includes loop protection
- **Open shortest path first (OSPF)**

Overview

delivers faster convergence; uses this link-state routing Interior Gateway Protocol (IGP), which supports ECMP, NSSA, and MD5 authentication for increased security and graceful restart for faster failure recovery

- **Border Gateway Protocol 4 (BGP-4)**
  delivers an implementation of the Exterior Gateway Protocol (EGP) utilizing path vectors; uses TCP for enhanced reliability for the route discovery process; reduces bandwidth consumption by advertising only incremental updates; supports extensive policies for increased flexibility; scales to very large networks
- **Intermediate system to intermediate system (IS-IS)**
  uses a path vector Interior Gateway Protocol (IGP), which is definedby the ISO organization for IS-IS routing and extended by IETF RFC 1195 to operate in both TCP/IP and the OSI reference model (Integrated IS-IS)
- **Static IPv6 routing**
  provides simple manually configured IPv6 routing
- **Dual IP stack**
  maintains separate stacks for IPv4 and IPv6 to ease the transition from an IPv4-only network to an IPv6-only network design
- **Routing Information Protocol next generation (RIPng)**
  extends RIPv2 to support IPv6 addressing
- **OSPFv3**
  provides OSPF support for IPv6
- **BGP+**
  extends BGP-4 to support Multiprotocol BGP (MBGP), including support for IPv6 addressing
- **IS-IS for IPv6**
  extends IS-IS to support IPv6 addressing
- **IPv6 tunneling**
  allows IPv6 packets to traverse IPv4-only networks by encapsulating the IPv6 packet into a standard IPv4 packet; supports manually configured, 6to4, and Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) tunnels; is an important element for the transition from IPv4 to IPv6
- **Multiprotocol Label Switching (MPLS)**
  uses BGP to advertise routes across Label Switched Paths (LSPs), but uses simple labels to forward packets from any Layer 2 or Layer 3 protocol, which reduces complexity and increases performance; supports graceful restart for reduced failure impact; supports LSP tunneling and multilevel stacks
- **Multiprotocol Label Switching (MPLS) Layer 3 VPN**
  allows Layer 3 VPNs across a provider network; uses Multiprotocol BGP (MP-BGP) to establish private routes for increased security; supports RFC 2547bis multiple autonomous system VPNs for added flexibility; supports IPv6 MPLS VPN
- **Multiprotocol Label Switching (MPLS) Layer 2 VPN**
  establishes simple Layer 2 point-to-point VPNs across a provider network using only MPLS Label Distribution Protocol (LDP); requires no routing and therefore decreases complexity, increases performance, and allows VPNs of non-routable protocols; uses no routing information for increased security; supports Circuit Cross Connect (CCC), Static Virtual Circuits (SVCs), Martini draft, and Kompella-draft technologies
- **Routing policy**
  allows custom filters for increased performance and security; supports ACLs, IP prefix, AS paths, community lists, and aggregate policies

Layer 3 services

- **Address Resolution Protocol (ARP)**
  determines the MAC address of another IP host in the same subnet; supports static ARPs; gratuitous ARP allows detection of duplicate IP addresses; proxy ARP allows normal ARP operation between subnets or when subnets are separated by a Layer 2 network
- **User Datagram Protocol (UDP) helper**
  redirects UDP broadcasts to specific IP subnets to prevent server spoofing
- **Dynamic Host Configuration Protocol (DHCP)**

Overview

simplifies the management of large IP networks and supports client and server; DHCP Relay enables DHCP operation across subnets

Quality of Service (QoS)

- **Traffic policing**
  supports Committed Access Rate (CAR) and line rate
- **Congestion management**
  supports FIFO, PQ, CQ, WFQ, CBQ, and RTPQ
- **Weighted random early detection (WRED)/random early detection (RED)**
  delivers congestion avoidance capabilities through the use of queue management algorithms
- **Hierarchical quality of service (HQoS)/Nested QoS**
  manages traffic uniformly, and hierarchically schedules traffic by user, network service, and application; provides more granular traffic control and quality assurance services than traditional QoS
- **Other QoS technologies**
  supports traffic shaping, MPLS QoS, and MP QoS/LF

Security

- **Dynamic Virtual Private Network (DVPN)**
  collects, maintains, and distributes dynamic public addresses through the VPN Address Management (VAM) protocol, making VPN establishment available between enterprise branches that use dynamic addresses to access the public network; compared to traditional VPN technologies, DVPN technology is more flexible and has richer features, such as NAT traversal of DVPN packets, AAA identity authentication, IPSec protection of data packets, and multiple VPN domains
- **IPSec VPN**
  supports DES, 3DES, and AES 128/192/256 encryption, and MD5 and SHA-1 authentication
- **Access control list (ACL)**
  supports powerful ACLs for both IPv4 and IPv6; ACLs are used for filtering traffic to prevent unauthorized users from accessing the network, or for controlling network traffic to save resources; rules can either deny or permit traffic to be forwarded; rules can be based on a Layer 2 header or a Layer 3 protocol header; rules can be set to operate on specific dates or times
- **Terminal Access Controller Access-Control System (TACACS+)**
  delivers an authentication tool using TCP with encryption of the full authentication request, providing additional security
- **Unicast Reverse Path Forwarding (URPF)**
  allows normal packets to be forwarded correctly, but discards the attaching packet due to lack of reverse path route or incorrect inbound interface; prevents source spoofing and distributed attacks
- **Network login**
  allows authentication of multiple users per port
- **RADIUS**
  eases security access administration by using a user/password authentication server
- **Network address translation (NAT)**
  supports one-to-one NAT, many-to-many NAT, and NAT control, enabling NAT-PT to support multiple connections; supports blacklist in NAT/NAT-PT, a limit on the number of connections, session logs, and multi-instances
- **Secure Shell (SSHv2)**
  uses external servers to securely log in into a remote device; with authentication and encryption, it protects against IP spoofing and plain text password interception; increases the security of SFTP transfers

Convergence

- **Internet Group Management Protocol (IGMP)**
  utilizes Any-Source Multicast (ASM) or Source-Specific Multicast (SSM) to manage IPv4 multicast networks; supports IGMPv1, v2, and v3

Overview

- **Protocol Independent Multicast (PIM)**
  defines modes of Internet IPv4 and IPv6 multicasting to allow one-to-many and many-to-many transmission of information; supports PIM Dense Mode (DM), Sparse Mode (SM), and Source-Specific Mode (SSM)
- **Multicast Source Discovery Protocol (MSDP)**
  allows multiple PIM-SM domains to interoperate; is used for inter-domain multicast applications
- **Multicast Border Gateway Protocol (MBGP)**
  allows multicast traffic to be forwarded across BGP networks and kept separate from unicast traffic

Integration

- **Embedded NetStream**
  improves traffic distribution using powerful scheduling algorithms, including Layer 4 to 7 services; monitors the health status of servers and firewalls
- **Embedded VPN and firewall**
  provides enhanced stateful packet inspection and filtering; delivers advanced VPN services with Triple DES (3DES) and Advanced Encryption Standard (AES) encryption at high performance and low latency, Web content filtering, and application prioritization and enhancement
- **SIP trunking**
  delivers multiple concurrent calls on one link; the carrier authenticates only the link, rather than carrying each SIP call on the link

Resiliency and high availability

- **Backup Center**
  acts as a part of the management and backup function to provide backup for device interfaces; delivers reliability by switching traffic over to a backup interface when the primary one fails
- **Virtual Router Redundancy Protocol (VRRP)**
  allows groups of two routers to dynamically back each other up to create highly available routed environments; supports VRRP load balancing
- **Embedded Automation Architecture (EAA)**
  monitors the internal event and status of system hardware and software, identifying potential problems as early as possible; collects field information and attempts to automatically repair the issues; based on the user configuration, onsite nformation will be sent to technical support
- **Bidirectional Forwarding Detection (BFD)**
  detects quickly the failures of the bidirectional forwarding paths between two devices for upper-layer protocols such as routing protocols and MPLS.

Management

- **HP Intelligent Management Center (IMC)**
  integrates fault management, element configuration, and network monitoring from a central vantage point; built-in support for third-party devices enables network administrators to centrally manage all network elements with a variety of automated tasks, including discovery, categorization, baseline configurations, and software images; the software also provides configuration comparison tools, version tracking, change alerts, and more
- **Industry-standard CLI with a hierarchical structure**
  reduces training time and expenses, and increases productivity in multivendor installations
- **Management security**
  restricts access to critical configuration commands; offers multiple privilege levels with password protection; ACLs provide telnet and SNMP access; local and remote syslog capabilities allow logging of all access
- **SNMPv1, v2, and v3**
  provide complete support of SNMP; provide full support of industry-standard Management Information Base (MIB) plus private

Overview

extensions; SNMPv3 supports increased security using encryption

- **Remote monitoring (RMON)**
  uses standard SNMP to monitor essential network functions; supports events, alarm, history, and statistics group plus a private alarm extension group
- **FTP, TFTP, and SFTP support**
  offers different mechanisms for configuration updates; FTP allows bidirectional transfers over a TCP/IP network; trivial FTP (TFTP) is a simpler method using User Datagram Protocol (UDP); Secure File Transfer Protocol (SFTP) runs over an SSH tunnel to provide additional security
- **Debug and sampler utility**
  supports ping and traceroute for both IPv4 and IPv6
- **Network Time Protocol (NTP)**
  synchronizes timekeeping among distributed time servers and clients; keeps timekeeping consistent among all clock-dependent devices within the network so that the devices can provide diverse applications based on the consistent time
- **Information center**
  provides a central repository for system and network information; aggregates all logs, traps, and debugging information generated by the system and maintains them in order of severity; outputs the network information to multiple channels based on user-defined rules
- **Management interface control**
  provides management access through modem port and terminal interface; provides access through terminal interface, telnet, or SSH
- **Network Quality Analyzer (NQA)**
  analyzes network performance and service quality by sending test packets, and provides network performance and service quality parameters such as jitter, TCP, or FTP connection delays; allows network manager to determine overall network performance and diagnose and locate network congestion points or failures
- **Role-based security**
  delivers role-based access control (RBAC); supports 16 user levels (0~15)
- **Standards-based authentication support for LDAP**
  integrates seamlessly into existing authentication services

Investment protection

- **Re-use of existing SIC and MIM modules**
  supports existing SIC and MIM modules, transceivers, and cables for investment protection

Ease of deployment

- **Zero-touch deployment**
  supports both USB disk auto deployment and 3G SMS auto deployment

Additional information

- **OPEX savings**
  simplifies and streamlines deployment, management, and training through the use of a common operating system, thereby cutting costs as well as reducing the risk of human errors associated with having to manage multiple operating systems across different platforms and network layers
- **Faster time to market**
  allows new and custom features to be brought rapidly to market through engineering efficiencies, delivering better initial and ongoing stability
- **Green initiative support**
  provides support for RoHS and WEEE regulations

Overview

Warranty and support

- **1-year Warranty 2.0**
  advance hardware replacement with 10-calendar-day delivery (available in most countries)
- **Electronic and telephone support (for Warranty 2.0)**
  limited electronic and 24x7 telephone support is available from HP for the entire warranty period; to reach our support centers, refer to www.hp.com/networking/contact-support; for details on the duration of support provided with your product purchase, refer to www.hp.com/networking/warrantysummary
- **Software releases**
  to find software for your product, refer to www.hp.com/networking/support; for details on the software releases available with your product purchase, refer to www.hp.com/networking/warrantysummary

Configuration

Build To Order:

BTO is a standalone unit with no integration. BTO products ship standalone are not part of a CTO or Rack-Shippable solution.

Router Chassis

HP MSR3064 Router — JG404A — See Configuration Note:3, 4, 5, 6

- 3 Fixed 10M/100M/1000M RJ45 ports
- 2 Fixed COMBO 1000M RJ45/SFP ports min=0 \ max=2 SFP Transceivers
- 4 - SIC module slots / 2 - DSIC module slots
- 6 - HMIM module slots (4 Half Height + 2 Full Height Slots) / 1 - DHMIM module slot (Double Width Full Height Slot)
- 2 - VPM slots
- 2 USB 2.0 Port for 3G modem and USB disk
- 1 CON/AUX port and 1 USB console port
- 2GB DDR3 SDRAM Included (4GB Max, by replacing existing single 2GB SDRAM)
- 1 - CF Card Slot
- Must select min 1 Power Supply (min=1 \ max=2)
- 3U - Height

HP MSR3044 Router — JG405A — See Configuration Note:3, 4, 5, 6

- 3 Fixed 10M/100M/1000M RJ45 ports
- 2 Fixed COMBO 1000M RJ45/SFP ports min=0 \ max=2 SFP Transceivers
- 4 - SIC module slots / 2 - DSIC module slots
- 4 - HMIM module slots (4 - Half Height Slots) / 0 - DHMIM module slot (Double Width Full Height Slot)
- 2 - VPM slots
- 2 USB 2.0 Port for 3G modem and USB disk
- 1 CON/AUX port and 1 USB console port
- 2GB DDR3 SDRAM Included (4GB Max, by replacing existing single 2GB SDRAM)
- 1 - CF Card Slot
- Must select min 1 Power Supply (min=1 \ max=2)
- 2U - Height

HP MSR3024 AC Router — JG406A — See Configuration Note:1, 2, 3, 4, 5, 6

- 3 Fixed 10M/100M/1000M RJ45 ports
- 1 Fixed COMBO 1000M RJ45/SFP port min=0 \ max=1 SFP Transceiver
- 4 - SIC module slots / 2 - DSIC module slots
- 2 - HMIM module slots (2 - Half Height Slots) / 0 - DHMIM module slot (Double Width Full Height Slot)
- 2 - VPM slots
- 2 USB 2.0 Port for 3G modem and USB disk
- 1 CON/AUX port and 1 USB console port
- 2GB DDR3 SDRAM Included (4GB Max, by replacing existing single 2GB SDRAM)
- 1 - CF Card Slot
- AC Power Supply included (+RPS Optional)
- 1U - Height

C15 PDU NA — JG406A#B2B

- C15 to C14 Jumper Cord (NA)

Configuration

C15 PDU ROW — JG406A#B2C
- C15 to C14 Jumper Cord (ROW)

220 NA — JG406A#B2E
- NEMA L6-20P Cord

HP MSR3012 AC Router — JG409A — See Configuration Note:1, 2, 3, 6
- 3 Fixed 10M/100M/1000M RJ45 ports
- 1 Fixed COMBO 1000M RJ45/SFP port min=0 \ max=1 SFP Transceiver
- 2 - SIC module slots / 0 - DSIC module slots
- 1 - HMIM module slot (1 - Full Height Slot) / 0 - DHMIM module slot (Double Width Full Height Slot
- 1 - VPM slot
- 2 USB 2.0 Port for 3G modem and USB disk
- 1 CON/AUX port and 1 USB console port
- 1GB DDR3 SDRAM Included (default=1GB \ max=1GB DDR SDRAM)
- AC Power Supply included
- 1U - Height

C15 PDU NA — JG409A#B2B
- C15 to C14 Jumper Cord (NA)

C15 PDU ROW — JG409A#B2C
- C15 to C14 Jumper Cord (ROW)

220 NA — JG409A#B2E
- NEMA L6-20P Cord

Configuration Rules:

Note 1 — 1 - AC Power Supply included

Note 2 — Localization required on orders without #B2B, #B2C or #B2E. (See Localization Menu)

Note 3 — The following Transceivers install into this Switch:

HP X120 1G SFP LC SX Transceiver	JD118B
HP X120 1G SFP LC LX Transceiver	JD119B
HP X125 1G SFP LC LH40 1310nm Transceiver	JD061A
HP X120 1G SFP LC LH40 1550nm Transceiver	JD062A
HP X125 1G SFP LC LH70 Transceiver	JD063B
HP X120 1G SFP LC LH100 Transceiver	JD103A
HP X115 100M SFP LC FX Transceiver	JD102B
HP X110 100M SFP LC LX Transceiver	JD120B
HP X110 100M SFP LC LH40 Transceiver	JD090A
HP X110 100M SFP LC LH80 Transceiver	JD091A
HP X120 1G SFP LC BX 10-U Transceiver	JD098B

Configuration

	HP X120 1G SFP LC BX 10-D Transceiver	JD099B
Note 4	The following DDR SDRAM install into this Switch:	
	HP X610 4GB DDR3 SDRAM UDIMM Memory (Must remove existing 2GB UDIMM to install the 4GB UDIMM)	JG530A
Note 5	The following CF Card install into this Switch:	
	HP X600 256M Compact Flash Card	JC686A
	HP X600 512M Compact Flash Card	JC685A
	HP X600 1G Compact Flash Card	JC684A
Note 6	The following VPM Modules install into this Router:	
	HP MSR G2 128-channel Voice Processing Module	JG417A

Box Level Integration CTO Models

CTO Router Chassis

HP MSR CTO Router Solution — JG500A

- SSP trigger sku

HP MSR3064 Router — JG404A — See Configuration Note:3, 4, 5, 6, 8

- 3 Fixed 10M/100M/1000M RJ45 ports
- 2 Fixed COMBO 1000M RJ45/SFP ports min=0 \ max=2 SFP Transceivers
- 4 - SIC module slots / 2 - DSIC module slots
- 6 - HMIM module slots (4 Half Height + 2 Full Height Slots) / 1 - DHMIM module slot (Double Width Full Height Slot)
- 2 - VPM slots
- 2 USB 2.0 Port for 3G modem and USB disk
- 1 CON/AUX port and 1 USB console port
- 2GB DDR3 SDRAM Included (4GB Max, by replacing existing single 2GB SDRAM)
- 1 - CF Card Slot
- Must select min 1 Power Supply (min=1 \ max=2)
- 3U - Height

HP MSR3044 Router — JG405A — See Configuration Note:3, 4, 5, 6, 8

- 3 Fixed 10M/100M/1000M RJ45 ports
- 2 Fixed COMBO 1000M RJ45/SFP ports min=0 \ max=2 SFP Transceivers
- 4 - SIC module slots / 2 - DSIC module slots
- 4 - HMIM module slots (4 - Half Height Slots) / 0 - DHMIM module slot (Double Width Full Height Slot)
- 2 - VPM slots
- 2 USB 2.0 Port for 3G modem and USB disk
- 1 CON/AUX port and 1 USB console port
- 2GB DDR3 SDRAM Included (4GB Max, by replacing existing single 2GB SDRAM)
- 1 - CF Card Slot
- Must select min 1 Power Supply (min=1 \ max=2)
- 2U - Height

Configuration

HP MSR3024 AC Router — JG406A
- 3 Fixed 10M/100M/1000M RJ45 ports — See Configuration Note:1, 2, 3, 4, 5, 6, 7, 8
- 1 Fixed COMBO 1000M RJ45/SFP port min=0 \ max=1 SFP Transceiver
- 4 - SIC module slots / 2 - DSIC module slots
- 2 - HMIM module slots (2 - Half Height Slots) / 0 - DHMIM module slot (Double Width Full Height Slot)
- 2 - VPM slots
- 2 USB 2.0 Port for 3G modem and USB disk
- 1 CON/AUX port and 1 USB console port
- 2GB DDR3 SDRAM Included (4GB Max, by replacing existing single 2GB SDRAM)
- 1 - CF Card Slot
- AC Power Supply included (+RPS Optional)
- 1U - Height

C15 PDU NA — JG406A#B2B
- C15 to C14 Jumper Cord (NA)

C15 PDU ROW — JG406A#B2C
- C15 to C14 Jumper Cord (ROW)

220 NA — JG406A#B2E
- NEMA L6-20P Cord

HP MSR3012 AC Router — JG409A
- 3 Fixed 10M/100M/1000M RJ45 ports — See Configuration Note:1, 2, 3, 6, 7, 8
- 1 Fixed COMBO 1000M RJ45/SFP port min=0 \ max=1 SFP Transceiver
- 2 - SIC module slots / 0 - DSIC module slots
- 1 - HMIM module slot (1 - Full Height Slot) / 0 - DHMIM module slot (Double Width Full Height Slot)
- 1 - VPM slot
- 2 USB 2.0 Port for 3G modem and USB disk
- 1 CON/AUX port and 1 USB console port
- 1GB DDR3 SDRAM Included (default=1GB \ max=1GB DDR SDRAM)
- AC Power Supply included
- 1U - Height

C15 PDU NA — JG409A#B2B
- C15 to C14 Jumper Cord (NA)

C15 PDU ROW — JG409A#B2C
- C15 to C14 Jumper Cord (ROW)

220 NA — JG409A#B2E
- NEMA L6-20P Cord

Configuration Rules:

Note 1 1 - AC Power Supply included

Configuration

Note 2	Localization required on orders without #B2B, #B2C or #B2E. (See Localization Menu)	
Note 3	The following Transceivers install into this Switch:	
	HP X120 1G SFP LC SX Transceiver	JD118B
	HP X120 1G SFP LC LX Transceiver	JD119B
	HP X125 1G SFP LC LH40 1310nm Transceiver	JD061A
	HP X120 1G SFP LC LH40 1550nm Transceiver	JD062A
	HP X125 1G SFP LC LH70 Transceiver	JD063B
	HP X120 1G SFP LC LH100 Transceiver	JD103A
	HP X115 100M SFP LC FX Transceiver	JD102B
	HP X110 100M SFP LC LX Transceiver	JD120B
	HP X110 100M SFP LC LH40 Transceiver	JD090A
	HP X110 100M SFP LC LH80 Transceiver	JD091A
	HP X120 1G SFP LC BX 10-U Transceiver	JD098B
	HP X120 1G SFP LC BX 10-D Transceiver	JD099B
Note 4	The following DDR SDRAM install into this Switch:	
	HP X610 4GB DDR3 SDRAM UDIMM Memory (Must remove existing 2GB UDIMM to install the 4GB UDIMM)	JG530A
Note 5	The following CF Card install into this Switch:	
	HP X600 256M Compact Flash Card	JC686A
	HP X600 512M Compact Flash Card	JC685A
	HP X600 1G Compact Flash Card	JC684A
Note 6	The following VPM Modules install into this Switch:	
	HP MSR G2 128-channel Voice Processing Module	JG417A
Note 7	#B2E is Offered only in AMS, Taiwan, and Japan.	
Note 8	If the Router Chassis is to be Box Level Factory Integrated (CTO), Then the #0D1 is required on the Router Chassis and integrated to the JG500A - HP MSR CTO Enablement. (Min 1/Max 1 Router per SSP)	

Remarks:

Drop down under power supply should offer the following options and results:
Switch to PDU Power Cord - replace localized option with #B2B in AMS or #B2C in APJ or EMEA.
Switch to Wall Power Cord - Should leave existing Localized Option (no #B2x options)
High Volt Power Cord - Should replace Localized option with #B2E for power supply and with #B2E for switch . (Offered only in AMS, Taiwan, and Japan)

Rack Level Integration CTO Models

Router Chassis

HP MSR3064 Router	JG404A

Configuration

- 3 Fixed 10M/100M/1000M RJ45 ports — See Configuration Note:3, 4, 5, 6
- 2 Fixed COMBO 1000M RJ45/SFP ports min=0 \ max=2 SFP Transceivers
- 4 - SIC module slots / 2 - DSIC module slots
- 6 - HMIM module slots (4 Half Height + 2 Full Height Slots) / 1 - DHMIM module slot (Double Width Full Height Slot)
- 2 - VPM slots
- 2 USB 2.0 Port for 3G modem and USB disk
- 1 CON/AUX port and 1 USB console port
- 2GB DDR3 SDRAM Included (4GB Max, by replacing existing single 2GB SDRAM)
- 1 - CF Card Slot
- Must select min 1 Power Supply (min=1 \ max=2)
- 3U - Height

HP MSR3044 Router — JG405A

- 3 Fixed 10M/100M/1000M RJ45 ports — See Configuration Note:3, 4, 5, 6
- 2 Fixed COMBO 1000M RJ45/SFP ports min=0 \ max=2 SFP Transceivers
- 4 - SIC module slots / 2 - DSIC module slots
- 4 - HMIM module slots (4 - Half Height Slots) / 0 - DHMIM module slot (Double Width Full Height Slot)
- 2 - VPM slots
- 2 USB 2.0 Port for 3G modem and USB disk
- 1 CON/AUX port and 1 USB console port
- 2GB DDR3 SDRAM Included (4GB Max, by replacing existing single 2GB SDRAM)
- 1 - CF Card Slot
- Must select min 1 Power Supply (min=1 \ max=2)
- 2U - Height

HP MSR3024 AC Router — JG406A

- 3 Fixed 10M/100M/1000M RJ45 ports — See Configuration Note:1, 2, 3, 4, 5, 6, 7
- 1 Fixed COMBO 1000M RJ45/SFP port min=0 \ max=1 SFP Transceiver
- 4 - SIC module slots / 2 - DSIC module slots
- 2 - HMIM module slots (2 - Half Height Slots) / 0 - DHMIM module slot (Double Width Full Height Slot)
- 2 - VPM slots
- 2 USB 2.0 Port for 3G modem and USB disk
- 1 CON/AUX port and 1 USB console port
- 2GB DDR3 SDRAM Included (4GB Max, by replacing existing single 2GB SDRAM)
- 1 - CF Card Slot
- AC Power Supply included (+RPS Optional)
- 1U - Height

C15 PDU NA — JG406A#B2B

- C15 to C14 Jumper Cord (NA)

C15 PDU ROW — JG406A#B2C

- C15 to C14 Jumper Cord (ROW)

HP MSR3012 AC Router — JG409A

- 3 Fixed 10M/100M/1000M RJ45 ports — See Configuration Note:1, 2, 3, 6, 7
- 1 Fixed COMBO 1000M RJ45/SFP port min=0 \ max=1 SFP Transceiver
- 2 - SIC module slots / 0 - DSIC module slots

Configuration

- 1 - HMIM module slot (1 - Full Height Slot) / 0 - DHMIM module slot (Double Width Full Height Slot)
- 1 - VPM slot
- 2 USB 2.0 Port for 3G modem and USB disk
- 1 CON/AUX port and 1 USB console port
- 1GB DDR3 SDRAM Included (default=1GB \ max=1GB DDR SDRAM)
- AC Power Supply included
- 1U - Height

C15 PDU NA JG409A#B2B

- C15 to C14 Jumper Cord (NA)

C15 PDU ROW JG409A#B2C

- C15 to C14 Jumper Cord (ROW)

Configuration Rules:

Note 1	1 - AC Power Supply included	
Note 2	Localization required on orders without #B2B, or #B2C. (See Localization Menu)	
Note 3	The following Transceivers install into this Router:	
	HP X120 1G SFP LC SX Transceiver	JD118B
	HP X120 1G SFP LC LX Transceiver	JD119B
	HP X125 1G SFP LC LH40 1310nm Transceiver	JD061A
	HP X120 1G SFP LC LH40 1550nm Transceiver	JD062A
	HP X125 1G SFP LC LH70 Transceiver	JD063B
	HP X120 1G SFP LC LH100 Transceiver	JD103A
	HP X115 100M SFP LC FX Transceiver	JD102B
	HP X110 100M SFP LC LX Transceiver	JD120B
	HP X110 100M SFP LC LH40 Transceiver	JD090A
	HP X110 100M SFP LC LH80 Transceiver	JD091A
	HP X120 1G SFP LC BX 10-U Transceiver	JD098B
	HP X120 1G SFP LC BX 10-D Transceiver	JD099B
Note 4	The following DDR SDRAM install into this Router:	
	HP X610 4GB DDR3 SDRAM UDIMM Memory (Must remove existing 2GB UDIMM to install the 4GB UDIMM)	JG530A
Note 5	The following CF Card install into this Router:	
	HP X600 256M Compact Flash Card	JC686A
	HP X600 512M Compact Flash Card	JC685A
	HP X600 1G Compact Flash Card	JC684A
Note 6	The following VPM Modules install into this Router:	
	HP MSR G2 128-channel Voice Processing Module	JG417A

Configuration

Note 7 If the CTO Base Model is ordered #0D1, Then #B2B, or #B2C is Required on the Router. (Optional when Router is not Factory Racked. See Drop down remark in "Remarks" section.)

Remarks:

Drop down under power supply should offer the following options and results:
Router to PDU Power Cord - replace localized option with #B2B in AMS or #B2C in APJ or EMEA.
Router to Wall Power Cord - Should leave existing Localized Option (no #B2x options)
High Volt Power Cord - Should replace Localized option with #B2E for power supply and with #B2E for Router . (Offered only in AMS, Taiwan, and Japan)

Power Supplies

(JG404A and JG405A only) System (std 0// max 2) User Selection (min 1 // max 2) MSR3064/3044 Router

HP X351 300W 100-240VAC to 12VDC Power Supply	JG527A See Configuration Note:1, 2
C15 PDU NA • C15 to C14 Jumper Cord (NA)	JG527A#B2B
C15 PDU ROW • C15 to C14 Jumper Cord (ROW)	JG527A#B2C
220 NA • NEMA L6-20P Cord	JG527A#B2E

Enter the following menu selections as integrated to the CTO Model X server above if order is factory built.

SIC Modules

System (std 0 // max 2 or 4) User Selection (min 0 // max 2 or 4) per Host (See Modules for Port information)

HP A-MSR 4-port 10/100Base-T Switch SIC Module	JD573B See Configuration Note:1, 4
HP A-MSR 9-port 10/100Base-T Switch DSIC Module	JD574B See Configuration Note:1, 3
HP A-MSR 1-port 10/100Base-T SIC Module	JD545B See Configuration Note:1, 4
HP A-MSR 1-port 100Base-X SIC Module	JF280A

Configuration

- min=0 \ max=1 SFP Transceiver — See Configuration Note:1, 4, 5

HP A-MSR 1-port GbE Combo SIC Module — JD572A
- min=0 \ max=1 SFP Transceiver — See Configuration Note:1, 4, 6

HP A-MSR 2-port FXO SIC Module — JD558A — See Configuration Note:2, 4

HP A-MSR 1-port FXO SIC Module — JD559A — See Configuration Note:2, 4

HP A-MSR 2-port FXS SIC Module — JD560A — See Configuration Note:2, 4

HP A-MSR 1-port FXS SIC Module — JD561A — See Configuration Note:2, 4

HP A-MSR 4-port FXS/1-port FXO DSIC Mod — JG189A — See Configuration Note:1, 3

HP A-MSR 1-port E1 Voice SIC Module — JD575A
- Must select 1 Voice Processing Module
  min=0 \ max=1 E1 Cable

See Configuration Note:2, 4, 7, 8, 13

HP A-MSR 1-port T1 Voice SIC Module — JD576A
- Must select 1 Voice Processing Module
  min=0 \ max=1 T1 Cable

See Configuration Note:2, 4, 9, 13

HP A-MSR 2-port ISDN-S/T Voice SIC Module — JF821A — See Configuration Note:2, 4

HP A-MSR 2-port FXS/1-port FXO SIC Module — JD632A — See Configuration Note:2, 4

HP A-MSR 1-port E1/Fractional E1 (75ohm) SIC Module — JD634B
- min=0 \ max=1 E1 or 2E1 Cable — See Configuration Note:2, 4, 7, 10

Configuration

HP A-MSR 1-port T1/Fractional T1 SIC Module	JD538A See Configuration Note:2, 4, 9
HP A-MSR 2-port E1/Fractional E1 (75ohm) SIC Module • min=0 \ max=1 2E1 Cable	JF842A See Configuration Note:2, 4, 10
HP A-MSR 1-port Enhanced Sync/Async Serial SIC Module • min=0 \ max=1 Serial Port Cable	JD557A See Configuration Note:2, 4, 11
HP A-MSR 1-port ISDN-S/T SIC Module	JD571A See Configuration Note:2, 4
HP A-MSR 8-port Async Serial SIC Module • Must select 1 8AS Communication Cable	JF281A See Configuration Note:2, 4, 12
HP A-MSR 16-port Async Serial SIC Module	JG186A See Configuration Note:2, 4, 14
HP A-MSR HSPA/WCDMA SIC Module	JG187A See Configuration Note:1, 4

Configuration Rules:

Note 1	These Modules can install directly to the Routers (JG404A, JG405A and JG406A) min=0\ max=2 per enclosure	
Note 2	These Modules can install directly to the Routers (JG404A, JG405A and JG406A) min=0\ max=4 per enclosure	
Note 3	These Modules can not install directly to the Routers (JG409A)	
Note 4	These Modules can install directly to the Routers (JG409A) min=0\ max=2 per enclosure	
Note 5	The following Transceivers install into this Module:	
	HP X115 100M SFP LC FX Transceiver	JD102B
	HP X110 100M SFP LC LX Transceiver	JD120B
	HP X110 100M SFP LC LH40 Transceiver	JD090A
	HP X110 100M SFP LC LH80 Transceiver	JD091A

Configuration

Note 6	The following Transceivers install into this Module:	
	HP X120 1G SFP LC SX Transceiver	JD118B
	HP X120 1G SFP LC LX Transceiver	JD119B
	HP X125 1G SFP LC LH40 1310nm Transceiver	JD061A
	HP X120 1G SFP LC LH40 1550nm Transceiver	JD062A
	HP X125 1G SFP LC LH70 Transceiver	JD063B
	HP X120 1G SFP LC LH100 Transceiver	JD103A
	HP X120 1G SFP LC BX 10-U Transceiver	JD098B
	HP X120 1G SFP LC BX 10-D Transceiver	JD099B
	HP X120 1G SFP LC LH100 Transceiver	JD103A
Note 7	The following E1 Cables install into this Module:	
	HP X260 E1 2*BNC 75 ohm 3m Router Cable	JD175A
	HP X260 E1 BNC 20m Router Cable	JD514A
	HP X260 E1/2 BNC 75 ohm 40m Router Cable	JD516A
Note 8	The following E1 Cables install into this Module:	
	HP X260 E1 RJ45 3m Router Cable	JD509A
	HP X260 E1 RJ45 20m Router Cable	JD517A
Note 9	The following T1 Cables install into this Module: JD518A-HP X260 T1 Router Cable	
	HP X260 T1 Router Cable	JD518A
Note 10	The following 2E1 Cables install into this Module:	
	HP X260 2E1 BNC 3m Router Cable	JD643A
Note 11	The following Cables install into this Module:	
	HP X260 RS449 3m DCE Serial Port Cable	JF826A
	HP X260 RS449 3m DTE Serial Port Cable	JF825A
	HP X200 X.21 DCE 3m Serial Port Cable	JD529A
	HP X200 V.24 DTE 3m Serial Port Cable	JD519A
	HP X200 V.35 DTE 3m Serial Port Cable	JD523A
	HP X260 RS530 3m DTE Serial Port Cable	JF827A
	HP X200 V.35 DCE 3m Serial Port Cable	JD525A
	HP X260 RS530 3m DCE Serial Port Cable	JF828A
	HP X200 V.24 DCE 3m Serial Port Cable	JD521A
	HP X200 X.21 DTE 3m Serial Port Cable	JD527A
Note 12	The following Cables install into this Module:	
	HP X260 SIC-8AS RJ45 0.28m Router Cable	JD642A
Note 13	The following Modules install into Routers and work with this Module:	
	HP MSR G2 128-channel Voice Processing Module	JG417A

Note 14 If this module is selected Then 4 - JG263A HP X260 mini D-28/4-RJ45 0.3m Rtr Cable are required to be on the same order.

HMIM Modules

System (std 0 // max 6 or 4 or 2 or 1) User Selection (min 0 // max 6 or 4 or 2 or 1) per Router Chassis (See Modules for Port information)

HP MSR 1-port E1 Voice HMIM Module — JG429A
- (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically) min=0 \ max=1 E1 Cable

See Configuration Note:1, 3, 5, 11, 13, 14

HP MSR 1-port T1 Voice HMIM Module — JG430A
- (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically) min=0 \ max=1 E1 Cable

See Configuration Note:1, 3, 10, 11, 13, 14

HP MSR 2-port E1 Voice HMIM Module — JG431A
- (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically) min=0 \ max=1 E1 Cable

See Configuration Note:1, 3, 5, 11, 13, 14

HP MSR 1-port T3 / CT3 / FT3 HMIM Module — JG435A
- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) min=0 \ max=2 E3/T3 Cable

See Configuration Note:2, 4, 6, 12, 13

HP MSR 1-port E3 / CE3 / FE3 HMIM Module — JG436A
- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) min=0 \ max=2 E3/T3 Cable

See Configuration Note:2, 4, 6, 12, 13

HP MSR 1-port OC-3c / STM-1c POS HMIM Module — JG438A
- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) min=0 \ max=1 SFP Transceiver

See Configuration Note:2, 4, 7, 12, 13

HP MSR 4-port Enhanced Sync / Async Serial HMIM Module — JG442A
- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) min=0 \ max=4 Serial Port Cable

See Configuration Note:2, 4, 8, 12, 13

HP MSR 8-port Enhanced Sync / Async Serial HMIM Module — JG443A

Configuration

- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) min=0 \ max=8 Serial Port Cable — See Configuration Note:2, 4, 8, 12, 13

HP MSR 4-port FXS HMIM Module — JG446A
- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) — See Configuration Note:2, 4, 12, 13

HP MSR 4-port FXO HMIM Module — JG447A
- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) — See Configuration Note:2, 4, 12, 13

HP MSR 4-port E&M HMIM Module — JG448A
- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) — See Configuration Note:2, 4, 12, 13

HP MSR 2-port E1 / CE1 / PRI HMIM Module — JG450A
- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) min=0 \ max=2 E1 Cable — See Configuration Note:2, 4, 5, 12, 13

HP MSR 4-port E1 / CE1 / PRI HMIM Module — JG451A
- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) min=0 \ max=4 E1 Cable — See Configuration Note:2, 4, 5, 12, 13

HP MSR 8-port E1 / CE1 / PRI (75ohm) HMIM Module — JG452A
- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) min=0 \ max=1 8E1 Cable — See Configuration Note:2, 4, 9, 12, 13

HP MSR 4-port E1 / Fractional E1 HMIM Module — JG453A
- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) min=0 \ max=4 E1 Cable — See Configuration Note:2, 4, 5, 12, 13

HP MSR 2-port T1 / CT1 / PRI HMIM Module — JG456A
- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) — See Configuration Note:2, 4, 12, 13

HP MSR 4-port T1 / Fractional T1 HMIM Module — JG457A
- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) — See Configuration Note:2, 4, 12, 13

HP MSR 1U HMIM Adapter Module — JG416A#B01

Configuration

- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) — See Configuration Note:2, 4, 12, 13, 15

HP MSR 0.5U HMIM Adapter Module — JG415A#B01

- (Half Height Module; Takes up 1 Half Height or 1 Full Height slot) — See Configuration Note:2, 4, 12, 13, 16

Configuration Rules:

Note 1 — These Modules can install directly to the Router Chassis (JG404A)
min=0\ max=4 per enclosure (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically)

Note 2 — These Modules can install directly to the Router Chassis (JG404A)
min=0\ max=6 per enclosure

Note 3 — These Modules can install directly to the Router Chassis (JG405A)
min=0\ max=2 per enclosure (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically)

Note 4 — These Modules can install directly to the Router Chassis (JG405A)
min=0\ max=4 per enclosure

Note 5 — The following Cables install into this Module:

HP X260 E1 2*BNC 75 ohm 3m Router Cable	JD175A
HP X260 E1 BNC 20m Router Cable	JD514A
HP X260 E1/2 BNC 75 ohm 40m Router Cable	JD516A
HP X260 E1 RJ45 3m Router Cable	JD509A
HP X260 E1 RJ45 20m Router Cable	JD517A

Note 6 — The following E3/T3 Cable and Connector install into this Module:

HP X260 T3/E3 Router Cable	JD531A
HP X260 E3-30 E3/T3 Router Cable	JD533A

Note 7 — The following Transceivers install into this Module:

HP X115 100M SFP LC FX Transceiver	JD102B
HP X110 100M SFP LC LX Transceiver	JD120B
HP X110 100M SFP LC LH40 Transceiver	JD090A
HP X110 100M SFP LC LH80 Transceiver	JD091A

Note 8 — The following Cables install into this Module:

HP X260 RS449 3m DCE Serial Port Cable	JF826A
HP X260 RS449 3m DTE Serial Port Cable	JF825A
HP X200 X.21 DCE 3m Serial Port Cable	JD529A
HP X200 V.24 DTE 3m Serial Port Cable	JD519A
HP X200 V.35 DTE 3m Serial Port Cable	JD523A

Configuration

	HP X260 RS530 3m DTE Serial Port Cable	JF827A
	HP X200 V.35 DCE 3m Serial Port Cable	JD525A
	HP X260 RS530 3m DCE Serial Port Cable	JF828A
	HP X200 V.24 DCE 3m Serial Port Cable	JD521A
	HP X200 X.21 DTE 3m Serial Port Cable	JD527A
Note 9	The following Cable install into this Module:	
	HP X260 8E1 BNC 75 ohm 3m Router Cable	JD512A
Note 10	The following T1 Cables install into this Module:	
	HP X260 T1 Router Cable	JD518A
Note 11	These Modules can install directly to the Router Chassis (JG406A) min=0\ max=1 per enclosure (Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically)	
Note 12	These Modules can install directly to the Router Chassis (JG406A) min=0\ max=2 per enclosure	
Note 13	These Modules can install directly to the Router Chassis (JG409A) min=0\ max=1 per enclosure	
Note 14	Full Height Module; Takes up 1 - Full Height slot or 2 - Half Height slots, vertically	
Note 15	1U HMIM Adapter Modules can adapt the following MIM Modules:	
	HP A-MSR 1-port E1 Voice MIM Module	JD565B
	HP A-MSR 2-port E1 Voice MIM Module	JD567B
	HP A-MSR 1-port T1 Voice MIM Module	JD566B
	HP A-MSR 2-port T1 Voice MIM Module	JD568B
	HP A-MSR 16-port FXS MIM Module	JF822A
	HP A-MSR 16-port Enhanced Async Serial MIM Module	JF841A
Note 16	0.5U HMIM Adapter Modules can adapt following MIM Modules:	
	HP A-MSR 8-port Enhanced Async Serial MIM Module	JF840A
	HP A-MSR 1-port T3/CT3/FT3 MIM Module	JD628A
	HP A-MSR 1-port E3/CE3/FE3 MIM Module	JD630A
	HP A-MSR 1-port OC-3c/STM-1c POS MIM Module	JG193A
	HP A-MSR 2-port Enhanced Sync/Async Serial MIM Module	JD540A
	HP A-MSR 4-port Enhanced Sync/Async Serial MIM Module	JD541A
	HP A-MSR 8-port Enhanced Sync/Async Serial MIM Module	JD552A
	HP A-MSR 4-port FXS MIM Module	JD553A
	HP A-MSR 4-port FXO MIM Module	JD542A
	HP A-MSR 4-port E&M MIM Module	JD539A
	HP A-MSR 2-port E1/CE1/PRI MIM Module	JD544B
	HP A-MSR 4-port E1/CE1/PRI MIM Module	JD550B
	HP A-MSR 8-port E1/CE1/PRI (75ohm) MIM Module	JD563A
	HP A-MSR 4-port E1/Fractional E1 MIM Module	JF257B

Configuration

HP A-MSR 8-port E1/Fractional E1 (75ohm) MIM Module	JF255A
HP A-MSR 2-port T1/CT1/PRI MIM Module	JD549A
HP A-MSR 4-port T1/Fractional T1 MIM Module	JF254B
HP A-MSR 8-port T1/CT1/PRI MIM Module	JC160A
HP A-MSR 8-port T1/Fractional T1 MIM Module	JC159A
HP A-MSR 2-port 10/100Base-T MIM Module	JD613A
HP A-MSR 4-port 10/100Base-T MIM Module	JD551A
HP A-MSR 2-port Gig-T MIM Module	JD548A
HP A-MSR 2-port FXO MIM Module	JD543A
HP A-MSR 4-port ISDN-S/T Voice MIM Module	JF837A

VPM Modules

HP MSR G2 128-channel Voice Processing Module	JG417A See Configuration Note:1, 2

Configuration Rules:

Note 1	These Modules can install directly to the Router JG404A, JG405A, JG406A min=0\ max=2 per enclosure JG409A min=0\ max=1 per enclosure
Note 2	VPM JG417A required if SIC-1VE1/SIC-1VT1 (JD575A/JD576A) are ordered

Transceivers

System (std 0 // max 2 or 1) User Selection (min 0 // max 2 or 1) per MSR3000 Router

HP X120 1G SFP LC SX Transceiver	JD118B See Configuration Note:1, 2
HP X120 1G SFP LC LX Transceiver	JD119B See Configuration Note:1, 2
HP X125 1G SFP LC LH40 1310nm Transceiver	JD061A See Configuration Note:1, 2
HP X120 1G SFP LC LH40 1550nm Transceiver	JD062A See Configuration Note:1, 2

Configuration

HP X125 1G SFP LC LH70 Transceiver	JD063B See Configuration Note:1, 2
HP X110 100M SFP LC LH40 Transceiver	JD090A See Configuration Note:1, 2
HP X110 100M SFP LC LH80 Transceiver	JD091A See Configuration Note:1, 2
HP X115 100M SFP LC FX Transceiver	JD102B See Configuration Note:1, 2
HP X110 100M SFP LC LX Transceiver	JD120B See Configuration Note:1, 2
HP X120 1G SFP LC LH100 Transceiver	JD103A See Configuration Note:1, 2
HP X120 1G SFP LC BX 10-U Transceiver	JD098B See Configuration Note:1, 2
HP X120 1G SFP LC BX 10-D Transceiver	JD099B See Configuration Note:1, 2

Configuration Rules:

Note 1 These Transceivers can install directly to JG404A and JG405A min=0\ max=2 per enclosure

Note 2 These Transceivers can install directly to JG406A and JG409A min=0\ max=1 per enclosure

Cables

HP X260 mini D-28/4-RJ45 0.3m Rtr Cable	JG263A
HP X200 V.24 DTE 3m Serial Port Cable	JD519A

Configuration

HP X200 V.24 DCE 3m Serial Port Cable	JD521A
HP X200 V.35 DTE 3m Serial Port Cable	JD523A
HP X200 V.35 DCE 3m Serial Port Cable	JD525A
HP X200 X.21 DTE 3m Serial Port Cable	JD527A
HP X200 X.21 DCE 3m Serial Port Cable	JD529A
HP X260 RS449 3m DTE Serial Port Cable	JF825A
HP X260 RS449 3m DCE Serial Port Cable	JF826A
HP X260 RS530 3m DTE Serial Port Cable	JF827A
HP X260 RS530 3m DCE Serial Port Cable	JF828A
HP X260 Auxiliary Router Cable	JD508A
HP X260 E1 RJ45 3m Router Cable	JD509A
HP X260 E1 RJ45 20m Router Cable	JD517A
HP X260 E1 BNC 75 ohm 3m Router Cable	JD175A
HP X260 E1 BNC 20m Router Cable	JD514A
HP X260 E1 BNC 75 ohm 40m Router Cable	JD516A
HP X260 E1 RJ45 BNC 75-120 ohm Conversion Router Cable	JD511A
HP X260 2E1 BNC 3m Router Cable	JD643A
HP X260 T1 Router Cable	JD518A
HP X260 T1 Voice Router Cable	JD535A
HP X260 T3/E3 Router Cable	JD531A
HP X260 E3-30 E3/T3 Router Cable	JD533A
HP X260 8E1 BNC 75 ohm 3m Router Cable	JD512A
HP X260 SIC-8AS RJ45 0.28m Router Cable	JD642A

Configuration

HP X200 Transit Plug D25F MP8(S) Single Cable JD636A

HP X200 Transit Cable RJ45 0.5m Single Cable JD641A

Configuration Rules:

Remarks: The following cable is used for RJ45 BNC Conversion
JD511A - HP X260 E1 RJ45 BNC 75-120 ohm Conversion Router Cable

The following Connector is used to extend E1/T1 Cables:
JD535A - HP X500 T1/E1 Voice RJ45 Interface Connector

Router Enclosure Options

SDRAM

User Selection (min 0 // max 1) (default=2GB \ max=4GB) per JG404A, JG405A and JG406A (4GB Max, by replacing existing single 2GB SDRAM)

HP X610 2GB DDR3 SDRAM UDIMM Memory JG529A
- Spare Only (Parts List Only)

HP X610 4GB DDR3 SDRAM UDIMM Memory JG530A
- (Must remove existing 2GB UDIMM to install the 4GB UDIMM)

Compact Flash Card

System (std 0 // max 1 External CF Card) per JG404A, JG405A and JG406A

HP X600 1G Compact Flash Card JC684A

HP X600 512M Compact Flash Card JC685A

HP X600 256M Compact Flash Card JC686A

External Redundant Power Supplies

JG406A and JG409A only - System (std 0 // max 1) User Selection (min 0 // max 1)

HP RPS 800 Redundant Power Supply JD183A
- Height = 1U

See Configuration Note:1, 2, 3

Configuration Rules:

Configuration

Note 1 These power supplies are supported on the following routers only:
JG406A - HP MSR3024 AC Router
JG409A - HP MSR3012 AC Router

Note 2 Localization required. (See Localization Menu for list.)

Note 3 JD637A - HP X290 MSR30 1m RPS Cable is required if power supply is selected.

Power Cables

System (std 0 // max 1) User Selection (min 0 // max 1) per JD183A

HP X290 MSR30 1m RPS Cable JD637A

Technical Specifications

HP MSR3012 AC Router (JG409A)

Ports	1 HMIM slot 2 SIC slots 1 VPM slot 3 RJ-45 1000BASE-T ports (IEEE 802.3ab Type 1000BASE-T) 1 SFP fixed Gigabit Ethernet SFP port	
Physical characteristics	**Dimensions**	17.32(w) x 18.9(d) x 1.74(h) in (44 x 48 x 4.42 cm) (1U height)
	Weight	15.76 lb (7.15 kg)
Memory and processor	RISC, 4 cores @ 1 GHz, 256 MB flash capacity, 1 GB DDR3 SDRAM	
Mounting	Desktop or can be mounted in a EIA standard 19-inch telco rack when used with the rack-mount kit in the package.	
Performance	**Throughput**	up to 2.6 Mpps (64-byte packets)
	Routing table size	200000 entries (IPv4), 200000 entries (IPv6)
	Forwarding table size	200000 entries (IPv4), 200000 entries (IPv6)
Environment	**Operating temperature**	32ºF to 113ºF (0ºC to 45ºC)
	Operating relative humidity	5% to 90%, noncondensing
	Nonoperating/Storage temperature	-40ºF to 158ºF (-40ºC to 70ºC)
	Nonoperating/Storage relative humidity	5% to 90%, noncondensing
	Altitude	up to 16,404 ft (5 km)
Electrical characteristics	**Frequency**	50/60 Hz
	Maximum heat dissipation	127 BTU/hr (133.98 kJ/hr)
	Voltage	100-120/200-240 VAC
	Maximum power rating	100 W
	Notes	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Reliability	**MTBF (years)**	52.56
Safety	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	
Emissions	EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR 22 Class A; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001	
Telecom	FCC part 68; CS-03	
Management	IMC - Intelligent Management Center; command-line interface; limited command-line interface; configuration menu; out-of-band management (RJ-45 Ethernet); SNMP Manager; Telnet; RMON1; FTP; in-line and out-of-band; modem interface; out-of-band management (serial RS-232C or Micro USB); IEEE 802.3 Ethernet MIB	

Technical Specifications

Services	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR554E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR555E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR556E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) 1-year, 6 hour Call-To-Repair Onsite for hardware (HR558E) 1 1-year, 24x7 software phone support, software updates (HR557E) Refer to the HP website at: **www.hp.com/networking/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP MSR3024 AC Router (JG406A)

Ports	2 HMIM slots 4 SIC slots or 2 DSIC slots 1 VPM slot 3 RJ-45 1000BASE-T ports (IEEE 802.3ab Type 1000BASE-T) 1 SFP fixed Gigabit Ethernet SFP port	
Physical characteristics	**Dimensions**	17.32(w) x 18.9(d) x 1.74(h) in (44 x 48 x 4.42 cm) (1U height)
	Weight	17.42 lb (7.9 kg)
Memory and processor	RISC, 4 cores @ 1 GHz, 256 MB flash capacity, 2 GB DDR3 SDRAM	
Mounting	Desktop or can be mounted in a EIA standard 19-inch telco rack when used with the rack-mount kit in the package.	
Performance	**Throughput**	up to 2.6 Mpps (64-byte packets)
	Routing table size	500000 entries (IPv4), 500000 entries (IPv6)
	Forwarding table size	500000 entries (IPv4), 500000 entries (IPv6)
Environment	**Operating temperature**	32ºF to 113ºF (0ºC to 45ºC)
	Operating relative humidity	5% to 90%, noncondensing

Technical Specifications

	Nonoperating/Storage temperature	-40ºF to 158ºF (-40ºC to 70ºC)
	Nonoperating/Storage relative humidity	5% to 90%, noncondensing
	Altitude	up to 16,404 ft (5 km)
Electrical characteristics	**Frequency**	50/60 Hz
	Maximum heat dissipation	168 BTU/hr (177.24 kJ/hr)
	Voltage	100-120/200-240 VAC
	Maximum power rating	100 W
	Notes	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Reliability	**MTBF (years)**	49.61
Safety		UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J
Emissions		EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR 22 Class A; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001
Telecom		FCC part 68; CS-03
Management		IMC - Intelligent Management Center; command-line interface; limited command-line interface; configuration menu; out-of-band management (RJ-45 Ethernet); SNMP Manager; Telnet; RMON1; FTP; in-line and out-of-band; modem interface; out-of-band management (serial RS-232C or Micro USB); IEEE 802.3 Ethernet MIB
Services		3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR554E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR555E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR556E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E)

1-year, 6 hour Call-To-Repair Onsite for hardware (HR558E) 1
1-year, 24x7 software phone support, software updates (HR557E)

Refer to the HP website at: **www.hp.com/networking/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP MSR3044 Router (JG405A)

Ports	4 HMIM slots 4 SIC slots or 2 DSIC slots 2 VPM slots 2 Power Supply slots 3 RJ-45 1000BASE-T ports (IEEE 802.3ab Type 1000BASE-T) 2 SFP fixed Gigabit Ethernet SFP ports	
Physical characteristics	**Dimensions**	17.32(w) x 18.9(d) x 3.47(h) in (44 x 48 x 8.81 cm) (2U height)
	Weight	27.45 lb (12.45 kg)
Memory and processor	RISC, 4 cores @ 1 GHz, 256 MB flash capacity, 2 GB DDR3 SDRAM	
Mounting	Desktop or can be mounted in a EIA standard 19-inch telco rack when used with the rack-mount kit in the package.	
Performance	**Throughput**	up to 3.5 Mpps (64-byte packets)
	Routing table size	500000 entries (IPv4), 500000 entries (IPv6)
	Forwarding table size	500000 entries (IPv4), 500000 entries (IPv6)
Environment	**Operating temperature**	32ºF to 113ºF (0ºC to 45ºC)
	Operating relative humidity	5% to 90%, noncondensing
	Nonoperating/Storage temperature	-40ºF to 158ºF (-40ºC to 70ºC)
	Nonoperating/Storage relative humidity	5% to 90%, noncondensing
	Altitude	up to 16,404 ft (5 km)
Electrical characteristics	**Frequency**	50/60 Hz
	Maximum heat dissipation	172 BTU/hr (181.46 kJ/hr)
	Voltage	100-120/200-240 VAC
	Maximum power rating	100 W
	Notes	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. No default Power Supply included in the chassis, Min.1/Max.4 power supplies should be ordered
Reliability	**MTBF (years)**	82.57
Safety	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	

Technical Specifications

Emissions	EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR 22 Class A; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001
Telecom	FCC part 68; CS-03
Management	IMC - Intelligent Management Center; command-line interface; limited command-line interface; configuration menu; out-of-band management (RJ-45 Ethernet); SNMP Manager; Telnet; RMON1; FTP; in-line and out-of-band; modem interface; out-of-band management (serial RS-232C or Micro USB); IEEE 802.3 Ethernet MIB
Services	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR554E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR555E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR556E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) 1-year, 6 hour Call-To-Repair Onsite for hardware (HR558E) 1 1-year, 24x7 software phone support, software updates (HR557E) Refer to the HP website at: **www.hp.com/networking/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP MSR3064 Router (JG404A)

Ports	6 HMIM slots 4 SIC slots or 2 DSIC slots 2 VPM slots 2 Power Supply slots 3 RJ-45 1000BASE-T ports (IEEE 802.3ab Type 1000BASE-T) 2 SFP fixed Gigabit Ethernet SFP ports	
Physical characteristics	**Dimensions**	17.32(w) x 18.9(d) x 5.31(h) in (44 x 48 x 13.5 cm) (3U height)
	Weight	36.49 lb (16.55 kg)
Memory and processor	RISC, 6 cores @ 1.3 GHz, 256 MB flash capacity, 2 GB DDR3 SDRAM	

Technical Specifications

Mounting	Desktop or can be mounted in a EIA standard 19-inch telco rack when used with the rack-mount kit in the package.	
Performance	**Throughput**	up to 5 Mpps (64-byte packets)
	Routing table size	500000 entries (IPv4), 500000 entries (IPv6)
	Forwarding table size	500000 entries (IPv4), 500000 entries (IPv6)
Environment	**Operating temperature**	32ºF to 113ºF (0ºC to 45ºC)
	Operating relative humidity	5% to 90%, noncondensing
	Nonoperating/Storage temperature	-40ºF to 158ºF (-40ºC to 70ºC)
	Nonoperating/Storage relative humidity	5% to 90%, noncondensing
	Altitude	up to 16,404 ft (5 km)
Electrical characteristics	**Frequency**	50/60 Hz
	Maximum heat dissipation	218 BTU/hr (229.99 kJ/hr)
	Voltage	100-120/200-240 VAC
	Maximum power rating	100 W
	Notes	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. No default Power Supply included in the chassis, Min.1/Max.4 power supplies should be ordered
Reliability	**MTBF (years)**	80.58
Safety	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	
Emissions	EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR 22 Class A; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001	
Telecom	FCC part 68; CS-03	
Management	IMC - Intelligent Management Center; command-line interface; limited command-line interface; configuration menu; out-of-band management (RJ-45 Ethernet); SNMP Manager; Telnet; RMON1; FTP; in-line and out-of-band; modem interface; out-of-band management (serial RS-232C or Micro USB); IEEE 802.3 Ethernet MIB	
Services	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR554E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR555E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR556E)	

4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E)
4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E)
4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E)
4-year, 24x7 SW phone support, software updates (UW013E)
5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E)
5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E)
5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E)
5-year, 24x7 SW phone support, software updates (UW014E)
3 Yr 6 hr Call-to-Repair Onsite (UW079E)
4 Yr 6 hr Call-to-Repair Onsite (UW080E)
5 Yr 6 hr Call-to-Repair Onsite (UW081E)
1-year, 6 hour Call-To-Repair Onsite for hardware (HR558E) 1
1-year, 24x7 software phone support, software updates (HR557E)

Refer to the HP website at: **www.hp.com/networking/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

Standards and protocols (applies to all products in series)

BGP
- RFC 1163 Border Gateway Protocol (BGP)
- RFC 1267 Border Gateway Protocol 3 (BGP-3)
- RFC 1657 Definitions of Managed Objects for BGPv4
- RFC 1771 BGPv4
- RFC 1772 Application of the BGP
- RFC 1773 Experience with the BGP-4 Protocol
- RFC 1774 BGP-4 Protocol Analysis
- RFC 1965 BGP-4 confederations
- RFC 1997 BGP Communities Attribute
- RFC 1998 PPP Gandalf FZA Compression Protocol
- RFC 2439 BGP Route Flap Damping
- RFC 2547 BGP/MPLS VPNs
- RFC 2796 BGP Route Reflection
- RFC 2842 Capability Advertisement with BGP-4
- RFC 2858 BGP-4 Multi-Protocol Extensions
- RFC 2918 Route Refresh Capability
- RFC 3065 Autonomous System Confederations for BGP
- RFC 3107 Support BGP carry Label for MPLS
- RFC 3392 Capabilities Advertisement with BGP-4
- RFC 4271 A Border Gateway Protocol 4 (BGP-4)
- RFC 4273 Definitions of Managed Objects for BGP-4
- RFC 4274 BGP-4 Protocol Analysis
- RFC 4275 BGP-4 MIB Implementation Survey
- RFC 4276 BGP-4 Implementation Report
- RFC 4277 Experience with the BGP-4 Protocol
- RFC 4360 BGP Extended Communities Attribute
- RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP)
- RFC 4724 Graceful Restart Mechanism for BGP
- RFC 4760 Multiprotocol Extensions for BGP-4

Denial of service protection
- CPU DoS Protection
- Rate Limiting by ACLs

Device management
- RFC 1155 Structure and Mgmt Information (SMIv1)
- RFC 1157 SNMPv1/v2c
- RFC 1305 NTPv3
- RFC 1591 DNS (client)
- RFC 1902 (SNMPv2)
- RFC 1908 (SNMP v1/2 Coexistence)
- RFC 1945 Hypertext Transfer Protocol -- HTTP/1.0
- RFC 2271 Framework
- RFC 2573 (SNMPv3 Applications)
- RFC 2576 (Coexistence between SNMP V1, V2, V3)
- RFC 2578-2580 SMIv2
- RFC 2579 (SMIv2 Text Conventions)
- RFC 2580 (SMIv2 Conformance)
- RFC 3416 (SNMP Protocol Operations v2)
- RFC 3417 (SNMP Transport Mappings)

General protocols
- RFC 768 UDP
- RFC 3036 LDP Specification
- RFC 3037 LDP (Label Distribution
- RFC 4448 Encapsulation Methods for Transport of Ethernet over

Technical Specifications

- RFC 783 TFTP Protocol (revision 2)
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 896 Congestion Control in IP/TCP Internetworks
- RFC 917 Internet Subnets
- RFC 925 Multi-LAN Address Resolution
- RFC 950 Internet Standard Subnetting Procedure
- RFC 951 BOOTP
- RFC 959 File Transfer Protocol (FTP)
- RFC 1027 Proxy ARP
- RFC 1048 BOOTP (Bootstrap Protocol) vendor information extensions
- RFC 1058 RIPv1
- RFC 1091 Telnet Terminal-Type Option
- RFC 1093 NSFNET routing architecture
- RFC 1141 Incremental updating of the Internet checksum
- RFC 1142 OSI IS-IS Intra-domain Routing Protocol
- RFC 1166 Internet address used by Internet Protocol (IP)
- RFC 1191 Path MTU discovery
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Technical Specifications

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- RFC 1493 Bridge MIB
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- RFC 1850 OSPFv2 MIB
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- RFC 2096 IP Forwarding Table MIB
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HP MSR 2-port E1/Fractional E1 (75ohm) SIC Module	JF842A
HP MSR 1-port T1/Fractional T1 SIC Module	JD538A
HP MSR 1-port Enhanced Sync/Async Serial SIC Module	JD557A
HP MSR 1-port ISDN-S/T SIC Module	JD571A
HP MSR 8-port Async Serial SIC Module	JF281A
HP MSR 16-port Async Serial SIC Module	JG186A
HP MSR HSPA/WCDMA SIC Module	JG187A
NEW HP MSR 1-port E1 Voice HMIM Module	JG429A
NEW HP MSR 1-port T1 Voice HMIM Module	JG430A
NEW HP MSR 2-port E1 Voice HMIM Module	JG431A
NEW HP MSR 4-port FXS HMIM Module	JG446A
NEW HP MSR 4-port FXO HMIM Module	JG447A
NEW HP MSR 4-port E and M HMIM Module	JG448A
NEW HP MSR 4-port Enhanced Sync/Async Serial HMIM Module	JG442A
NEW HP MSR 8-port Enhanced Sync/Async Serial HMIM Module	JG443A
NEW HP MSR 2-port E1/CE1/PRI HMIM Module	JG450A
NEW HP MSR 4-port E1/CE1/PRI HMIM Module	JG451A
NEW HP MSR 4-port E1/Fractional E1 HMIM Module	JG453A
NEW HP MSR 8-port E1/CE1/PRI (75ohm) HMIM Module	JG452A
NEW HP MSR 2-port T1/CT1/PRI HMIM Module	JG456A
NEW HP MSR 4-port T1/Fractional T1 HMIM Module	JG457A
NEW HP MSR 1-port E3/CE3/FE3 HMIM Module	JG436A
NEW HP MSR 1-port T3/CT3/FT3 HMIM Module	JG435A
NEW HP MSR 1-port OC-3c/STM-1c POS HMIM Module	JG438A
NEW HP MSR G2 128-channel Voice Processing Module	JG417A
NEW HP MSR 1U HMIM Adapter Module	JG416A
NEW HP MSR 0.5U HMIM Adapter Module	JG415A
Power cords	
HP X290 MSR30 1m RPS Cable	JD637A

Accessories

Memory	
HP X600 1G Compact Flash Card	JC684A
HP X600 512M Compact Flash Card	JC685A
HP X600 256M Compact Flash Card	JC686A
NEW HP X610 2GB DDR3 SDRAM UDIMM Memory	JG529A
NEW HP X610 4GB DDR3 SDRAM UDIMM Memory	JG530A

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